

The billing process for usage for unbundled local switching, ISDN and Centrex is similar to resale billing. As for resale, AMA/MCRIS creates the EMR files to provide the usage information recorded by BA-NY switches to the CLECs. The main difference occurs in the transmission of billing usage information from AMA/MCRIS to CABS. Usage data for UNEs does not pass through the BCRIS application, but is sent directly by AMA/MCRIS to CABS.

The CABS application calculates the usage based charges, as well as the relevant recurring and non-recurring charges. It matches the charges with payment and adjustment transactions to calculate the outstanding balance, and produces the wholesale bill. UNE wholesale bills are sent to CLECs once a month.

UNE loop service is not switch based, and therefore does not generate any usage records. The applicable charges are generated by the BCRIS application, and follow a very similar path to resale customers.

For the month of July 1997, BA-NY billed 27 CLECs for almost 14 million call records and recurring charges. Year-to-date through the month of July, the company billed CLECs for more than 58 million call records and recurring charges, and created 182 EMR tapes.

## **Approach**

To assess the company's ability to accurately capture wholesale usage data, we compared the process for collecting wholesale and retail data, and conducted stand-alone usage tests. The usage test involved placing calls over 14 test lines comprised of six resale, six UNE-platform and two retail lines. We made the following types of calls from the test lines:

1. Local intraSwitch
2. Local interSwitch
3. Local toll
4. 1-800
5. IXC-out
6. 0+ collect
7. 0- operator assist
8. Phonesmart dial-back
9. Information Provider calls (976)
10. Directory Assistance with call completion (DACC)

In addition, we made long distance calls from the state of Pennsylvania to the wholesale lines. The calls were made to test BA-NY's ability to capture and provide

and STARREP provide similar functionality to users (see Exhibit H-2 for a listing of functions supported by each interface). In particular, both systems support testing the line for trouble, creating a trouble ticket, modifying a trouble ticket, closing-out a trouble ticket, manually overriding the system to request the dispatch of a technician, and accessing trouble ticket status and history. RETAS interfaces with all the same back-end systems as STARREP uses to perform the maintenance and repair tasks/functions. Six trouble transaction types are presently available for each system including: (i) Test, (ii) Create Transfer, (iii) Status Trouble, (iv) Modify Trouble, (v) Request Cancellation of Trouble, and (vi) Trouble Report History.

RETAS currently processes approximately 1,800 trouble tickets per month, which is approximately 0.5% of the total 366,000 retail trouble tickets per month processed through STARREP.

Upon receiving a trouble report from an end user and determining that the problem may be in the local loop, the CLEC service representative creates a mechanized line test (MLT) request in RETAS. BA-NY's loop maintenance operating system electronically tests the line and displays the results on a separate MLT response Web page. MLT is the same OSS that is accessed directly by a BA-NY retail representative. RETAS automatically determines the circuit type, geographic region and destination for the CLEC representatives, whereas BA-NY representatives must make these determinations and manually select the MLT service. If there is a problem detected in the local loop, the CLEC service representative can then create a trouble ticket request in RETAS. BA-NY processes this request and provides a trouble ticket confirmation number. An appointment date for the end user is then returned to the CLEC service representative on a trouble ticket response page. To check the status of a trouble ticket, the CLEC service representative creates a status request and receives the status on the corresponding status response page. This request/response environment is consistent across all of the RETAS functions.

CLECs are also able to modify a pending trouble ticket or close out a pending trouble ticket. Changes to a trouble ticket result in a subsequent report being forwarded to a CLEC. CLECs have further functionality to view the three most recently reported trouble tickets on line by generating a Trouble Report History.

For all six transactions noted above, RETAS provides the CLEC with additional automatic functionality whereas the BA-NY representative must manually perform these functions.

Although BA-NY has enhanced the functionality of RETAS to support UNE-loops and most other UNE's, it is not currently utilized by the CLECs to support unbundled loop maintenance. Trouble reports for unbundled loops are handled manually by a team of BA-NY service representatives and technicians. The service representative receives a trouble report from the CLEC and enters it directly into the Work Force Administration Control System (WFA/C). A technician coordinates all testing and repair, and

## **Results**

The results of our maintenance and repair analysis show that the front-end wholesale and retail system interfaces provide similar functionality and that, on average, wholesale and retail troubles are resolved in similar time frames. In addition, the test of wholesale vs. retail processing by the back-end systems indicate that they use the same systems.

Our review of the front-end process shows that the combined system interaction time for the mechanized line test and trouble ticket creation is approximately 178 seconds for RETAS (wholesale) compared to 162 seconds in STARREP (retail). The difference of 16 seconds is less than 10% of total system interaction time. Exhibit H-3 details the comparison of interaction times by activity.

As discussed above, in many instances we found RETAS to have more functionality than STARREP. Additionally, based on discussions with an operating CLEC and internal BA-NY interviews, we found that training for RETAS required less time compared to STARREP. According to the company, training for RETAS takes 2 days compared to approximately 2 weeks of training for retail representatives using STARREP.

To test the back-end processes we selected five common trouble types and traced them through each system using the company system audit trail reports. As Exhibit H-4 shows, the same systems were used in the same sequence.

Historical maintenance and repair performance metrics are detailed in exhibits H-5a through H-5d. Various aspects of system quality were evaluated by comparing the individual components of the overall trouble report rate. We used network trouble report rates for our comparison of retail and resale, and combined central office and loop trouble rates for our retail to UNE loop comparison. Network trouble report rate showed no significant difference between retail and resale. For the last three months, the average network trouble report rate for retail was 1.5%, compared to 0.9% for resale. Combined central office and loop trouble report rate also showed no significant difference between retail and UNE loops. For the last three months, the average combined central office and loop trouble report rate was 0.5% for UNE loops, 0.9% for resale and 1.5% for retail.

Repair accuracy and effectiveness was evaluated by comparing repeat trouble calls within thirty days. Historical data for this measure showed that there was no significant difference between retail and wholesale. The average repeat trouble call rate for retail over the last three months was 15.8 %, compared to 15.0 % for resale and 1.3 % for UNE loops.

Repair timeliness was evaluated by comparing wholesale and retail mean time to repair (MTTR) values. Historical data for this measurement also showed that there was no significant difference between retail and resale MTTR. However, there was a larger difference between retail and UNE loops. The average MTTR rate for retail over the

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**Scope and Approach**

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## **Section C**

### **Scope and Approach**

**Exhibit C-1: End-to-end test order volumes**

**Exhibit C-2: Comparison of company volume projections to  
end-to-end test volumes**

**Exhibit C-3: Summary of the end-to-end test**

## Comparison of company volume projections to end-to-end test volumes

Number of Lines

Order Type	BA-NY Projections <sup>3</sup>	Test	
		Avg. Day <sup>1</sup>	Peak Day <sup>2</sup>
Resale <sup>4</sup>	1,499	5,171	9,326
UNE Loop & Platform <sup>5</sup>	341	695	1,314
<b>Total</b>	<b>1,840</b>	<b>5,866</b>	<b>10,640</b>

Number of Orders

Order Type	BA-NY Projections <sup>6</sup>	Test	
		Avg. Day <sup>1</sup>	Peak Day <sup>2</sup>
Resale <sup>4</sup>	993	3,447	6,217
UNE Loop & Platform <sup>5</sup>	341	623	1,236
<b>Total</b>	<b>1,334</b>	<b>4,070</b>	<b>7,453</b>

**Notes:**

1. Average day volumes are based on day one of the test.
2. "Peak Day" is based on day two of the test.
3. Projected volumes are based upon company projections (see exhibit C-2a).
4. Resale volumes include POTS and Complex orders.
5. Test UNE-loop volumes include live production only and show actual number of orders and their associated lines. BA-NY projections include total of UNE Links and Local Switching.
6. The following estimates were used to convert lines into orders: Resale 1.5 lines/order, UNE Loop and Platform equal 1 line/order.

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## End-to-end test

The "end to end" test was designed to evaluate Bell Atlantic-New York (BA-NY's) ordering, provisioning and billing operational support systems at volume levels anticipated in 1998. The scope of the test included centers that support the entire North region, but focused on the New York (rather than New England) area. The test was used as a basis of critically examining the functionality, performance, and current capacity of the processes and systems supporting the ordering and provisioning. C&L was responsible for monitoring the test and reviewing its results to support our findings in a number of areas.

A central feature of the test was the establishment of a test-CLEC who simulated the operations of an actual CLEC placing orders in the BA-NY's New York market. The test-CLEC performed the following functions: (1) transmitting the order requests to BA-NY via the electronic gateways; (2) responding to queries from BA-NY; and (3) receiving firm order confirmations (indicating that the service requested was ready for provisioning) and service order completion notices (indicating that provisioning was complete).

The test was designed to process approximately 15,000 orders through ordering, provisioning and billing. Orders from the test CLEC were submitted over a three-day period. The total production during the test included orders submitted both by the test-CLEC as well as live production from operational CLECs.

### *1998 Volume Projections*

A key component of this review was evaluating the appropriate OSSs' during the test at expected 1998 volumes. An overview of the company's test volumes is shown in Exhibit C-1.

The end-to-end test volumes were designed to stress the systems and processes to a high degree with volumes in excess of projected 1998 activity. The projections show expected order volume and identify average and peak volumes days by order type. As part of our review we evaluated the test volumes against the company's projections. We found the test volumes to significantly exceed the 1998 projections. Exhibit C-2 includes the detail of our review of the 1998 volume projections.

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## End-to-end test (continued)

### *Pre-Test Trials*

Over the course of the design and implementation of the end-to-end test, BA-NY was able to use pre-testing trials to identify problems in its systems and institute corrective action that significantly improved throughput and processing performance. Early pre-testing showed that the physical structure of the front-end systems, the physical ability to receive CLEC orders at high volumes, was lacking in the necessary throughput capacity. In investigating the cause and possible solution, the company identified other system architecture and software improvements. As a result, the company was able to improve overall throughput performance four-fold from trial stage testing until the actual end-to-end test was run on October 1.

### *Test Process*

The ordering process followed the same process as that used by CLECs' placing orders with BA-NY. The service requests were prepared by BA-NY using actual customer account information and represent actual lines and services. The customer account details were verified through the pre-ordering systems and the individual service requests developed include all fields that would be required by an independent CLEC. Customer account files and associated service requests were given to the CLEC to be used for order transmission. Resale orders were transmitted by the CLEC to the BA-NY order processing system, via EDI. Based upon the information provided in the service request, they were either (1) processed through the ordering system to provisioning; (2) rejected by the systems and returned to the CLEC for completion of the orders; or (3) transferred to a representative for manual processing. Orders were allocated to the ICT overflow center for processing when order volumes reached certain levels.

UNE orders were transmitted via EIF by the CLEC to BA-NY's order processing systems. Since UNE orders require manual processing, all orders were sent to the CATC Center.

New line resale and UNE platform orders were also submitted by the test CLEC as part of the test. 150 of the new orders were processed through the system to installation, including the dispatch of trucks in the field. The remaining new orders were also submitted but "future dated" and deleted from the provisioning system following the test. This allowed testing of the input aspects of ordering and provisioning while not requiring the cost of actually "rolling a truck" or installing a drop to the home.



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**Pre-Ordering Process**

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## **Section D**

### **Pre-Ordering Process**

- D-1: Pre-order process flow**
- D-2: Pre-order activity by order type**
- D-3: Historical performance metrics**
- D-4: Pre-ordering stress-test response time results**
- D-5: Comparison of test pre-order transactions to company projections**

# Most common pre-order activity and corresponding legacy systems for different order types

Order Types	Pre-order Transactions and Legacy Systems				
	CSR (CRIS)	Prod. Avail. (BMEX)	Validate Address (PREMIS)	Reserve TN (PREMIS)	Due Date (SMARTS)
<b>Resale</b>					
Resale New		●	●	●	●
Resale As-Is	●				
Resale with Change	●	●		●	
<b>UNE</b>					
UNE-Platform New		●	●	●	●
UNE-Platform As-Is	●				●
UNE-Platform with Change	●	●			●
UNE-Loop-New		●	●		●
UNE-Loop-Conversion	●	●	●		
UNE-Loop-INP Only	●	●			
<b>Retail</b>					
New		●	●	●	●
Subsequent	●	●		●	

Source: Personnel Interviews

## Historical response times for wholesale and retail pre-order transactions

**Definition:** Elapsed time from receipt of query request through the access platform until response is available to CLEC through the access platform.

**Specified Standards:** No standard Specifically defined. The Company's position is that the response times provided currently allow CLECs to perform the pre-ordering functions in an effective and efficient manner.

Pre-ordering system response times (seconds)

	CSR			Average non-CSR		
	Wholesale (W)	Retail (R)	Difference (W-R)	Wholesale (W)	Retail (R)	Difference (W-R)
July	11.59	0.14	11.45	11.36	0.62	10.74
August	11.53	0.14	11.39	17.53	0.59	16.94
September	3.13	0.14	2.99	11.09	0.62	10.47

Source: BA-NY DCAS reports.

The wholesale CSR data for 8/15-8/22 could not be accessed and is unrecoverable.

BA-NY currently does not test the response times for Telephone Number availability and reservations.

The improvement in the CSR response time for September was due to a change in system architecture implemented in August.

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**Comparison of test pre-order transactions to company projections**

1. Company 1998 projections of number of transactions (J. Smith Affidavit, Exhibit 2)	3,963,647*
2. Company 1998 daily number of transactions (L1 / 260)	15,245
3. Test pre-order capacity	46,120

*\* Total projected transactions include pre-order, order, maintenance and repair, and billing inquiry transactions.*

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**Ordering Process**

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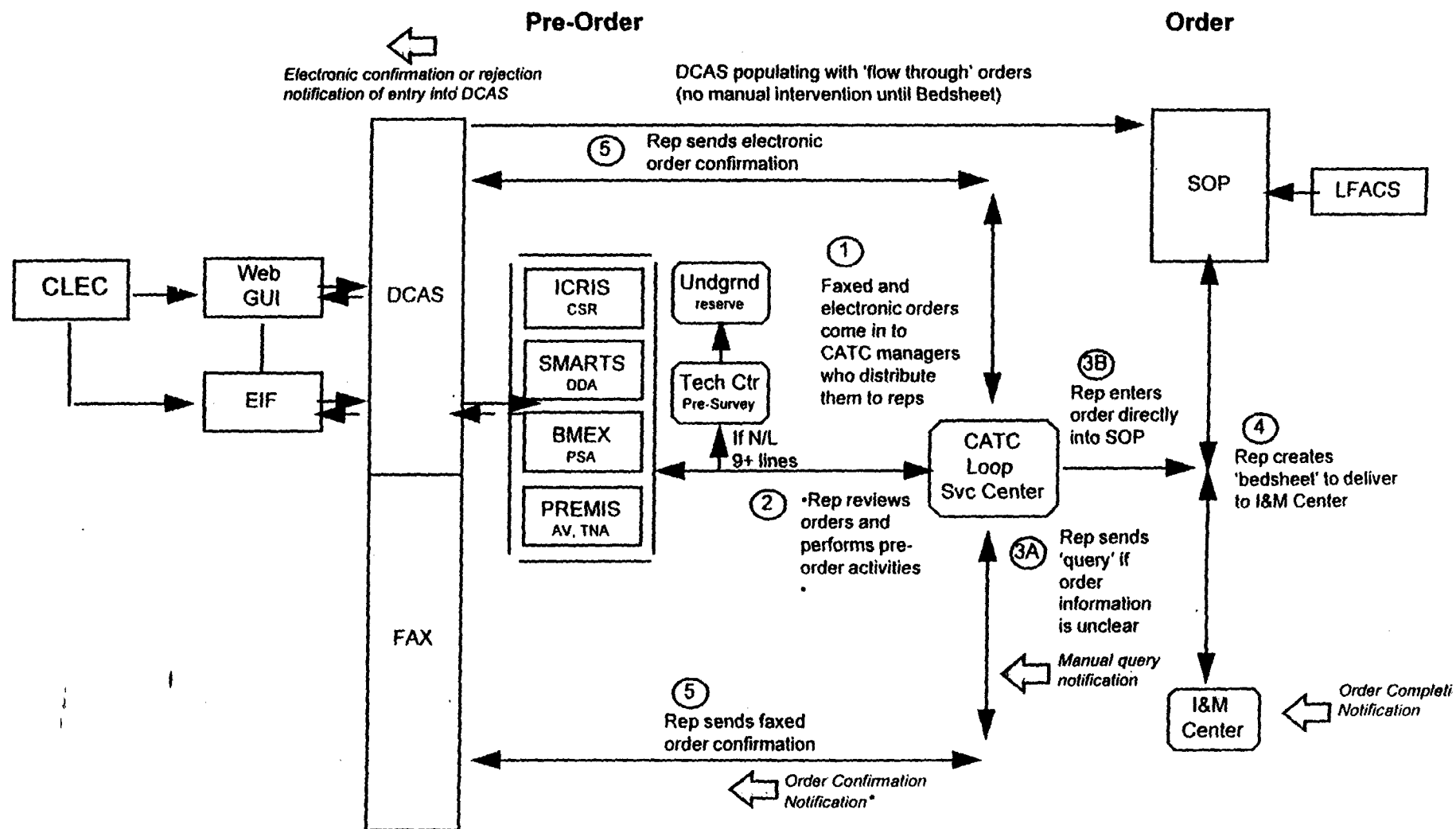
## **Section E**

### **Ordering Process**

E-1: Process maps  
E-2: Systems flow  
E-3: Current staffing levels  
E-4: Order process and corresponding metrics  
E-5: Historical metrics  
E-6: End-to-end test order volumes

E-7 : Ordering performance metrics for the end-to  
end test  
E-8 : OSS capacity analysis  
E-9 : DCAS capacity utilization analysis  
E-10 : Results of time and activity study  
E-11 : Manual capacity analysis  
E-12 : Historical performance metrics from manual  
time & activity study

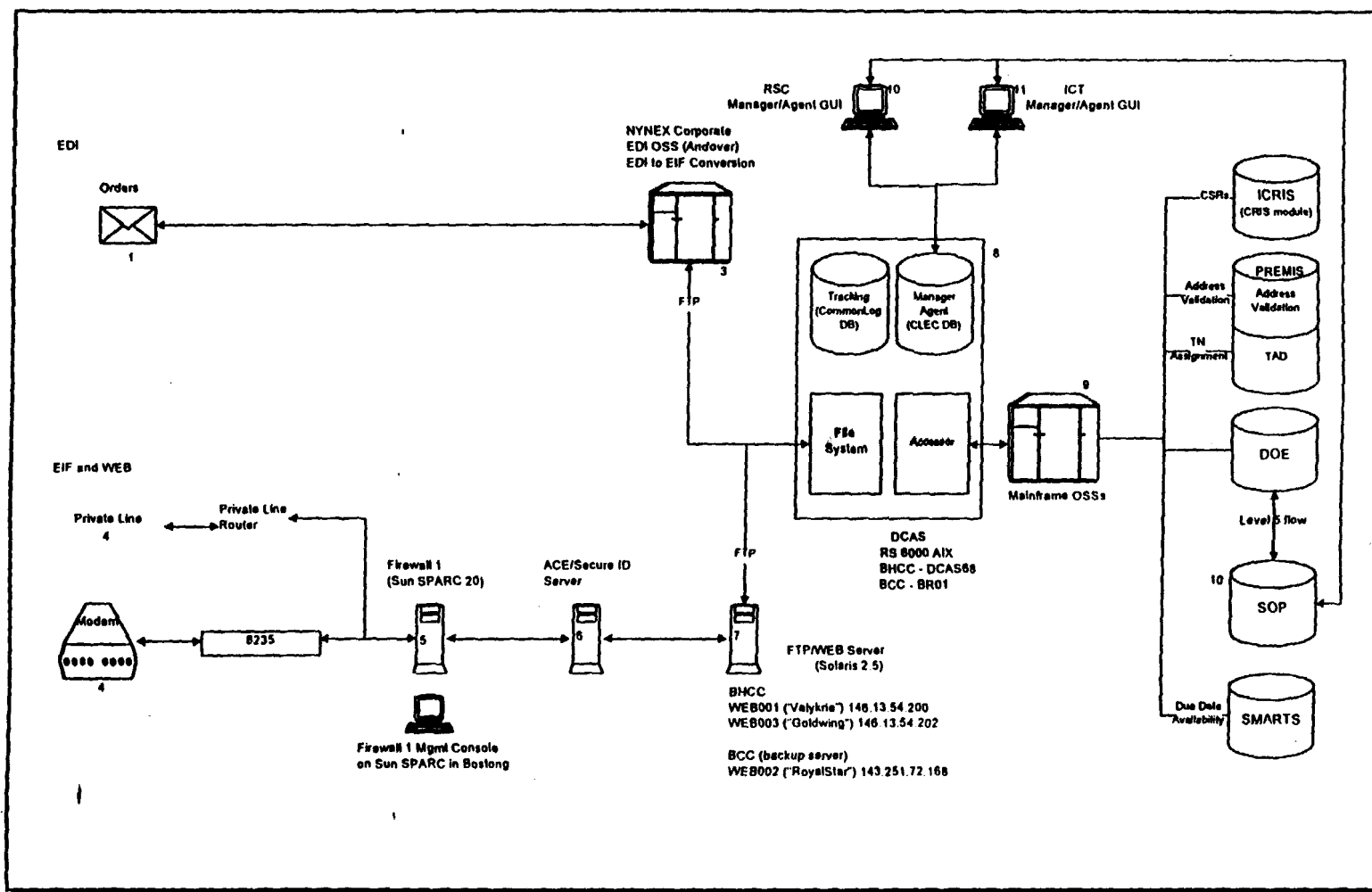
## UNE Loop pre-order and order process flow



\* System testing underway to allow SOP to send order confirmations and completion notifications automatically to the CLEC



# Resale pre-order and order systems flow



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**Current staffing levels by center**
**October 1997 Staffing Levels**

	Service Order Managers	Service Representatives
NY Resale	5	39
NE Resale	5	31
NY CATC	2	17
NE CATC	1	30
ICT	1	8 (3)*
<b>TOTAL</b>	<b>14</b>	<b>128</b>

*Source: C&L interviews, BA-NY organization charts*

\* ICT has 3 service order representatives working in other BA-NY outsourcing groups who are trained on processing BA-N resale orders and who can fill in when extra resources are necessary

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**Historical order volumes processed: NY and NE**

	Apr-97	May-97	Jun-97	Jul-97	Aug-97	Sep-97
UNE-Loop	1,033	685	649	540	281	528
Resale	3,447	4,603	5,990	6,962	7,017	9,835

*Source: BA-NY DCAS - Summary by reseller reports*

*UNE-loop order volumes include non-mechanized orders only. Only 200 electronic loops orders have been received by the center.*

*UNE-loop order volumes include Centrex and other complex order types.*

*Data prior to April 97 for UNE-loop is not readily available; the center has been in operation for over 2 years.*

*UNE-platform order volumes not available.*

*Data for 8/15-8/29 is not available due to Web reporting problems.*

*Resale volumes are all mechanized orders processed; there have been no non-mechanized resale orders.*

*Resale volumes include New, Converts, Complex, etc.*

## Historical order-reject rate performance

**Definition:** Percentage of total orders rejected due to an error or omission.

**Specified Targets:** An order is rejected if there is an error or omission in it made by the CLEC. Therefore there is no specified target for this metric.

### Order rejection rates

	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97	Aug-97	Sep-97
Resale requests submitted	241	732	908	1,426	1,981	2,997	3,871	5,196	6,884	7,733	9,140	11,896
Resale order rejects	77	168	217	419	633	838	1,099	1,486	1,577	1,904	2,273	3,015
Resale reject rate	32%	23%	24%	29%	32%	28%	28%	29%	23%	25%	25%	25%
UNE reject rate	-	-	-	-	-	-	-	-	-	-	2.7%	7.9%

Source: BA-NY DCAS - Canny affidavit

All rejects are due to CLEC errors (wrong or missing information)

UNE rejection rates are only available for August and September 1997

## Historical order reject timeliness performance

**Definition:** Average response time from receipt of an invalid service request to distribution of order rejection

**Specified Targets:** 90% within 2 hours for mechanized Resale and UNE  
 90% within 24 hours for manual Resale and UNE  
 90% within 48 hours for UNE-loop received via fax

### Order Reject Timeliness for Resale and UNE Orders

	Resale			UNE		
	July	Aug.	Sept.	July	Aug.	Sept.
<b>Manual Processing (Hours)</b>						
Reject Notice: Response Time (<10 Lines)*	1.3	13.3	6.9	N.A.	66.0	69.6
<b>Mechanized Processing (Hours)</b>						
Reject Notice: Response Time**	0.0002	0.0002	0.257	N.A.	*	2.9

Source: BA-NY File 3Q97 Order performance report

\*Includes New York and New England orders. Resale POTS results based on a random sample of 200 conversion orders.

\*\*Includes New York and New England orders.

## Ordering performance metrics for the end-to-end test - actual performance

Order type			Day 1	Day 2	Day 3	3 Day average
% Flow Through (%)	Resale (L5)		93%	95%	93%	94%
	UNE Platform		0%	0%	0%	0%
	UNE Loop		0%	0%	0%	0%
Order rejection rate (%)	Resale (L5)		10%	8%	9%	9%
	UNE Platform		1.3%	0.4%	0.3%	0.6%
	UNE Loop		30%	23%	13%	23%
Order confirmation notification timeliness (Hours:Minutes)	Resale	L5	1:36	1:29	0:47	1:20
		L2*	3:46	3:43	2:30	3:27
	UNE Platform		1:08	1:48	1:48	1:28
	UNE Loop		43:00	16:00	50:00	33:00
Order reject timeliness (Hours:Minutes)	Resale	L5	0:25	0:37	0:09	0:25
		L2*	3:49	3:33	2:25	3:27
	UNE Platform		3:12	2:37	-	2:56
	UNE Loop		47:00	37:00	31:00	40:00
Order completion notification timeliness (Hours:Minutes or % within target)	Resale	L5	100%	100%	100%	100%
		L2	3:40	3:14	3:44	3:30
	UNE Platform		all completion notifications delivered next business day			
	UNE Loop		*	*	*	0:22

L2\* resale metrics are for test CLEC orders only as DCAS currently does not report on non-level 5 orders

(1) target is noon of the next business day following the completion of the order in CRIS

target is 90% within the applicable time frame

\* Insufficient sample size gathered during the end-to-end test

## OSS capacity analysis

### OSS Processes Supported

Application Systems	Pre-ordering	Ordering	Provisioning	Billing	Repair & Maint.	Capacity Utilization (%)					
						Shift 1		Shift 2		Shift 3	
						Average	Peak	Average	Peak	Average	Peak
CRIS	●			●		43	43	41	53	39	53
DOE	●					65	80	52	68	54	73
SOP			●			32	37	28	36	22	28
FACS			●			28	38	24	33	16	29
WFA			●		●	80	89	58	81	29	55
CABS				●		44	59	17	34	37	63
LMOS					●	74	85	49	65	50	62

Source: BA-NY standard monthly systems capacity analysis report

● - indicates the processes supported by each application

"-" : data not available

Shift 1,2 and 3 represent the 3 daily shifts during which the mainframe systems are operated

## Results of order process time and activity study

Order Center	Sample Size*	Avg. # of lines	Processing Times (minutes/order)			Productive hours/day assumption
			Average	Max	Min	
NY Resale	244 (L)	2.8	13.0	57	1	6hr30min
NE Resale	128 (L)	3.3	18.0	96	2	6hr30min
NY CATC	102 (L)	3.9	24.8	123	2	6hr30min
NE CATC	512 (T)	1.0	6.6	49	1	6hr30min
ICT - Resale	204 (T)	1.0	6.7	46	1	6hr30min
ICT - Platform	231 (T)	1.0	7.0	20	2	6hr30min

*L: Live orders; T: Test orders*

*The live orders were collected over a 5 week period*

*\*number of orders upon which manual capacity calculations are based*

*Process times = time elapsed from when rep begins work on order to time order confirmation is sent*



## Historical performance metrics from manual time & activity study

Our manual study involved gathering ordering metrics and processing data for a 4-5 week period prior to the BA-NY end-to-end test. The purpose of our manual study was to corroborate findings from the test and to verify that performance between what BA-N is currently doing and the test results were not dramatically different. During the course of our manual study, we gathered information from every service order representative in each ordering center (with the exception of the NY Resale Center in which we used a sample size of reps). Service order representatives participated by filling out detailed tracking sheets on each of the orders they worked on over this period of time.

Historical Performance Metrics from Manual Time & Activity Study						
Order Centers	% Bus vs Res	Dominant Order Types	Average Lines Per Order	Query Rate	Order Reject Timeliness	Order Confirmation Timeliness
<b>NY Resale</b>	57% Bus 43% Res	35% CFB* 56% Subs	2.8	20%	15.7 h**	22 h**
<b>ICT Resale</b>	29% Bus 71% Res	91% CFB*	1.7	0%	N/A**	15.2 h**
<b>NY CATC</b>	100% Bus 0% Res	29% CFB* 30% New 19% INP	3.9	14%	39.6 h	68 h
<b>NE CATC</b>	90% Bus 10% Res	88% CFB*	1.3	65%*	16.5 h**	11.3 h**

\*Only one CLEC, who is new to the business, is sending orders at this time, thereby driving up the query rate; this rate should decrease significantly in the near future

\*CFB = Convert with Final Bill

\*\*Note: Timeliness measures calculated including all cycle times, except weekends